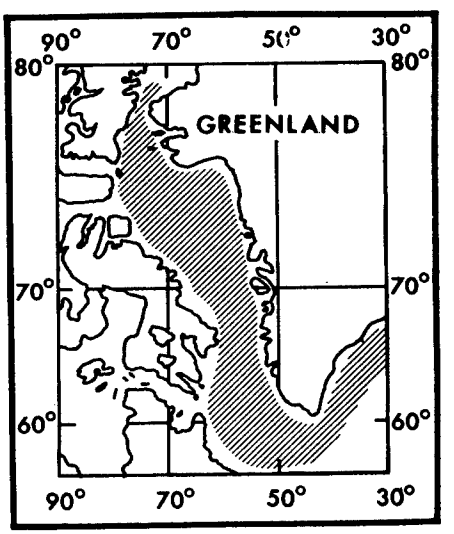
IR NO. 68-23

INFORMAL REPORT

OCEANOGRAPHIC CRUISE SUMMARY BAFFIN BAY-DAVIS STRAIT-LABRADOR SEA, SUMMER 1967



MAY 1968

NAVAL OCEANOGRAPHIC OFFICE
WASHINGTON, D. C. 20390

INFORMAL REPORT

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ABSTRACT

A two-phase operation was conducted in the Baffin Bay area during the summer of 1967. The first phase was a bottom sediment survey using the USCGC SOUTHWIND. The primary objective of this phase was to obtain an extensive suite of bottom samples and bottom sediment sound velocities. The second phase was an oceanographic survey using the USCGC EDISTO. Ice potential stations were occupied in support of NAVOCEANO's East Arctic Ice Forecast Program. Additional Nansen cast stations were taken to assist the U.S. Coast Guard in their continual monitoring of the Labrador Current.

A comparison of the temperature and salinity data obtained on the EDISTO survey with data obtained on a similar cruise by CCGS LABRADOR in 1966 indicated that freezing should have begun earlier in 1967 than in 1966.

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This report has been reviewed and is approved for release as an UNCLASSIFIED Informal Report.

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I. PREVIOUS KNOWLEDGE OF THE REGION

Baffin Bay is a deep enclosed basin with a maximum depth of approximately 2400 meters. In the bay's northern reaches, the sea floor is continuous with that of Smith Sound and, over a large area, resembles a submerged headland.

The sediments of Baffin Bay show considerable size variation due to differences in mode of transportation, bottom configuration, and current patterns. In shoal areas, ice rafted material predominates and corer penetration is usually minimal due to the coarse nature of the sediments. In the deeper areas, silts and clays form the major size fraction, but occasional pockets of ice rafted material also are present. The gross sedimentary pattern is one of textbook simplicity with coarse nearshore materials grading into finer sediments seaward.

The Labrador Sea, Baffin Bay, Davis Strait, and Smith Sound areas are characterized by relatively warm, north setting surface currents in their eastern reaches and cold, south setting currents near their western shores. Towards the center of these areas, surface currents tend to be zonal and not as well developed as those found in the eastern and western boundaries. Waters originating in the Arctic Basin flow into Baffin Bay through Hudson Strait, Lancaster Sound, Jones Sound, and Smith Sound. Strong currents are sometimes encountered in the vicinity of Lancaster Sound and Hudson Strait.

Surface temperatures and salinities generally are low throughout most of this region. Even in summer, minimum temperatures often are less than -1°C. Maximum temperatures and salinities are associated with waters from the Atlantic Ocean. However, temperatures higher than 6°C are not common, and north of Davis Strait, maximum salinities rarely exceed 35‰.

II. OBJECTIVES OF THE SURVEY

The Baffin Bay-Davis Strait-Labrador Sea survey consisted of two phases: a bottom sediment phase using USCGC SOUTHWIND (W-AGB 280) and an oceanographic phase using USCGC EDISTO (W-AGB 284).

The primary objective of the bottom sediment phase of the survey was to obtain an extensive suite (65 stations) of bottom samples and bottom sediment sound velocities from the Baffin Bay area. In addition, bottom photographs were to be taken at selected localities, and plankton hauls were to be made whenever feasible.

On the oceanographic phase of the survey, the established ice potential stations were to be occupied in support of NAVOCEANO's continuing East Arctic Ice Forecast Program. Additional Nansen cast stations were to be taken at the request of the U.S. Coast Guard to assist in their continual monitoring of the Labrador Current.

III. NARRATIVE OF THE SURVEY

The bottom sediment survey was conducted from SOUTHWIND and was a cooperative project with NAVOCEANO, the Office of Naval Research, and Rennselaer Polytechnical Institute (R.P.I.). Five NAVOCEANO scientists and two R.P.I. graduate students participated in the operations.

Because operational difficulties caused SOUTHWIND to fall behind schedule, only 17 days were available in which to complete the bottom sediment program. As a result, only 48 of the 65 bottom sediment stations originally planned were occupied, and no bottom photographs were obtained.

The survey team boarded SOUTHWIND at Sondrestrom Fjord, Greenland, on 1 September 1967. Bottom sediment stations were occupied from 3 to 17 September. On 23 September, SOUTHWIND rendezvoused with EDISTO at Gronnedal, Greenland. At this time, three NAVOCEANO scientists and the equipment needed for the ice forecast and Coast Guard stations were transferred from SOUTHWIND to EDISTO. SOUTHWIND then departed for CONUS. EDISTO arrived at ice potential station 1 on 25 September and completed the survey on 14 October.

IV. RESULTS

The 48 bottom sediment stations occupied during the SOUTHWIND survey (Fig. 1) yielded 45 modified Ewing cores, seven Kullenberg cores, 40 orange peel grab samples, and 22 plankton hauls. In addition, 4000 miles of bathymetric data were collected, and BT lowerings were made every 6 hours. The 52 Nansen cast stations taken during the EDISTO survey (Fig. 2) resulted in 660 serial measurements of salinity and temperature, three orange peel grab samples, and two modified Ewing cores. BT's were taken every 6 hours and prior to most Nansen casts. In all, 96 BT's were collected during the EDISTO survey.

Table I presents a summary of the data collected at the SOUTHWIND stations. Table II presents a summary of the data collected at the EDISTO stations.

V. METHODS OF COLLECTION AND ANALYSIS

A. Geological Oceanography.

1. Cores. The cores collected during the SOUTHWIND and EDISTO surveys were "open barrel" gravity cores. In most cases, 250 pounds of weight were added to the corers to help achieve good penetration. A tripping mechanism was used on the first few attempts with the modified Ewing corers; this practice was discontinued when a corer was lost because the hydrographic wire snagged on the tripping mechanism. To prevent dessication of the modified Ewing cores, a highly impermeable polycarbonate plastic core liner was used, and the sample filled liners were wrapped in a "moisture envelope" consisting of wet tissue

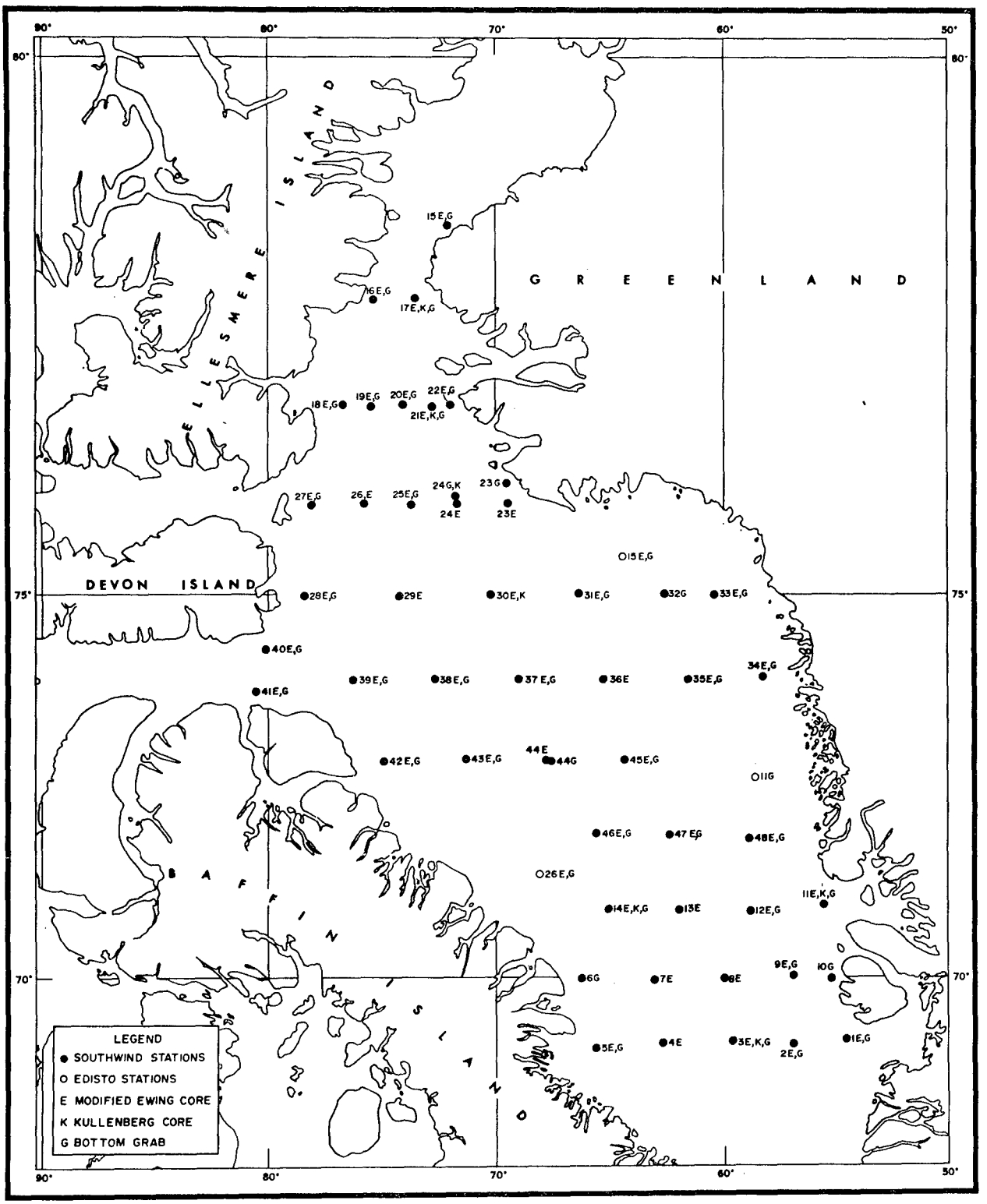


FIGURE 1. BOTTOM SAMPLE LOCATIONS

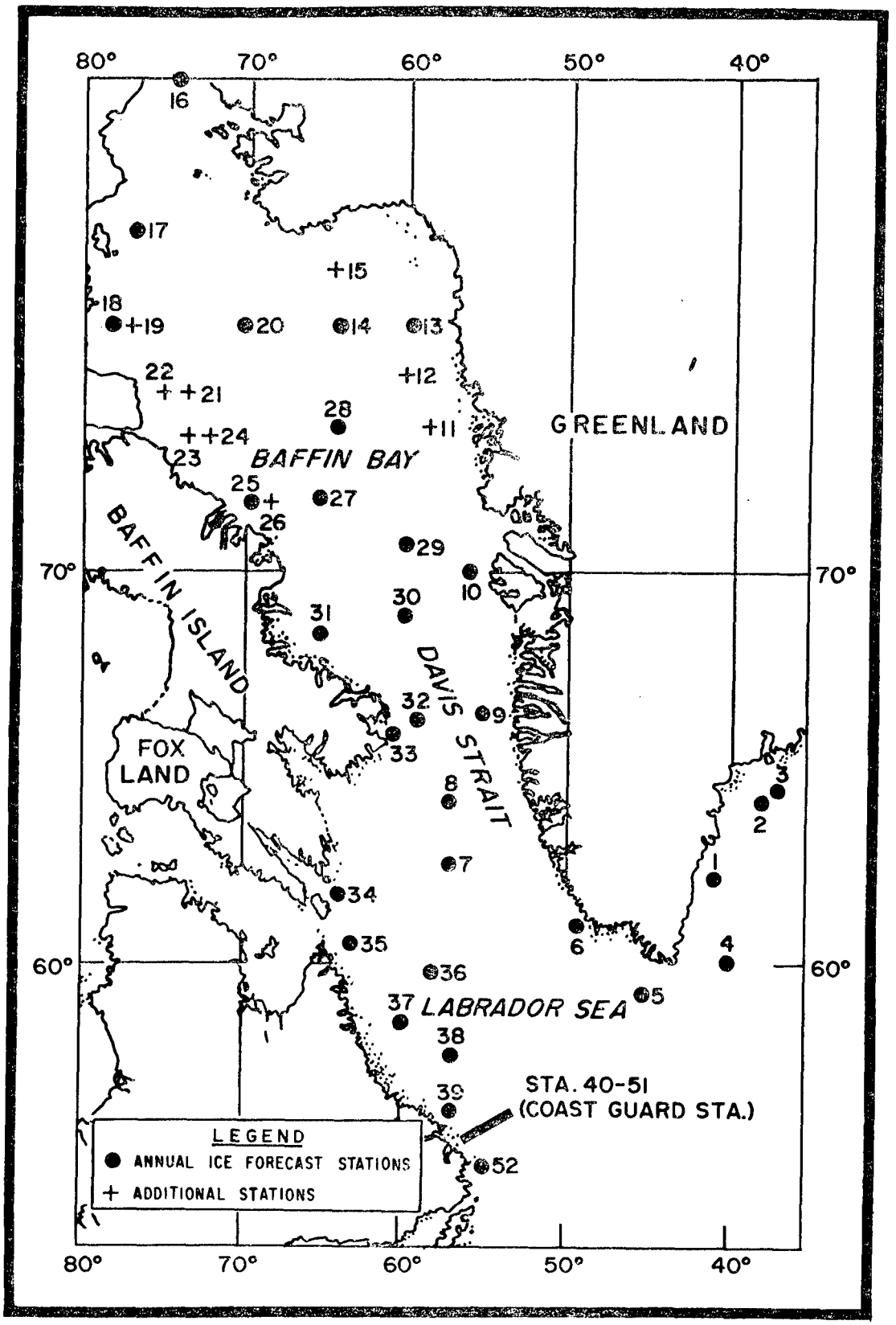


FIGURE 2. OCEANOGRAPHIC STATION LOCATIONS OCCUPIED BY EDISTO

TABLE 1. SOUTHWIND DATA COLLECTION SUMMARY

Stat. No.	Sonic Depth (Meters)	Mod. Ewing Core	Kullenberg Core	Orange Peel Grab	Redox, pH Interstitial	Plankton Haul
1	130	✓		✓		vert. horiz.
2	196	✓		✓		
3	1300	✓	✓	✓	✓	horizontal
4	1928	✓				
5	590	✓		✓		
6	176			✓		vert. horiz.
7	2110	✓				
8	480	✓				horizontal
9	190	✓		✓		horizontal
10	103			✓		horizontal
11	535	✓	✓	✓	✓	
12	417	✓		✓		
13	2019	✓				
14	2110	✓	✓	✓	✓	horizontal
15	315	✓		✓		
16	648	✓		✓		horizontal
17	263	✓	✓	✓	✓	
18	190	✓		✓		horizontal
19	537	✓		✓		
20	447	✓		✓		horizontal
21	482	✓	✓	✓	✓	
22	1200	✓		✓		horizontal
23	435	✓		✓		horizontal
24	450	✓	✓	✓	✓	
25	400	✓		✓		horizontal
26	353	✓				
27	236	✓		✓		horizontal
28	383	✓		✓		
29	721	✓				
30	848	✓	✓		✓	horizontal
31	410	✓		✓		
32	159			✓		horizontal
33	850	✓		✓		
34	280	✓		✓		horizontal
35	595	✓		✓		
36	1928	✓				horizontal
37	2038	✓		✓		
38	940	✓		✓		horizontal
39	832	✓		✓		
40	684	✓		✓		
41	821	✓		✓		horizontal
42	903	✓		✓		
43	1379	✓		✓		
44	2385	✓		✓		
45	2195	✓		✓		
46	2383	✓		✓		
47	2110	✓		✓		
48	309	✓		✓		

TABLE II. EDISTO DATA COLLECTION SUMMARY

Stat. No.	Sonic Depth (Meters)	Max. Depth Sampled	Temp. Sal.	Bottom Sample
1	457	258	√	
2	631	125	√	
3	503	300	√	
4	2560	300	√	
5	2195	280	√	
6	128	100	√	
7	2377	354	√	
8	823	281	√	
9	73	64	√	
10	128	119	√	
11	190	180	√	Orange Peel
12	344	312	√	
13	532	300	√	
14	616	300	√	
15	172	160	√	Orange Peel Mod. Ewing
16	530	292	√	
17	281	275	√	
18	585	286	√	
19	587	272	√	
20	1560	284	√	
21	914	270	√	
22	940	276	√	
23	805	272	√	
24	1068	299	√	
25	837	317	√	
26	1930	299	√	Orange Peel Mod. Ewing

TABLE II. (Cont.)

Stat. No.	Sonic Depth (Meters)	Max. Depth Sampled	Temp. Sal.	Bottom Sample
27	2286	300	√	
28	2195	308	√	
29	695	296	√	
30	1635	341	√	
31	144	125	√	
32	732	258	√	
33	464	246	√	
34	502	232	√	
35	305	245	√	
36	2743	345	√	
37	192	182	√	
38	2487	192	√	
39	183	161	√	
40	3036	1728	√	
41	2651	1752	√	
42	1646	1126	√	
43	914	492	√	
44	318	312	√	
45	232	204	√	
46	199	181	√	
47	181	160	√	
48	172	168	√	
49	157	148	√	
50	168	155	√	
51	163	151	√	
52	238	226	√	

paper overlain by Saran Wrap. These cores were later shipped to R.P.I. for geotechnical and geological analyses. The Kullenberg cores were processed aboard ship for geochemical properties.

2. Grabs. Orange peel bucket samplers were used to obtain all grab samples. The total weight of each grab sampler and its attached lead weights was approximately 120 pounds. Representative splits from each grab sample were placed in jars for shipment to NAVOCEANO and R.P.I.

3. pH and Redox Potentials. A Beckman Model 76 Expanded Scale pH Meter with suitable combination electrodes (glass-calomel for pH and platinum-calomel for redox potentials) was used to measure the pH and redox potential as the seven Kullenberg cores. Holes were drilled through the plastic liners of the Kullenberg cores (normally every 6 inches), and the proper electrode system was inserted about 1 inch into the core to make the redox potential or pH measurement. After each analysis, the hole in the core liner was sealed with tape. Unfortunately, it was impossible to initiate these measurements immediately after recovery of the Kullenberg cores. The time interval between recovery and analysis varied from about 1 hour to 2 days. Calibrations were performed before each series of analyses according to the instruction manual for the Beckman Model 76 Expanded Scale pH Meter. Despite these calibrations and frequent checks on the condition of the electrodes, considerable drift was encountered during all redox potential measurements.

4. Interstitial Water Samples. Interstitial water samples were collected by squeezing portions of the Kullenberg cores in a mechanical core squeezer. Citrate bottles were used to store these samples for shipment to R.P.I.

5. Sediment Sound Velocities. Sediment sound velocity analyses were performed on the modified Ewing cores after the SOUTHWIND's return to Baltimore. The measurements were made aboard ship with a sediment sound velocimeter developed by NAVOCEANO. With this instrument, sediment sound velocities can be measured without removing the sediment sample from its plastic core liner. A section of core liner filled with distilled water was used as a standard, and an oil coupler system connected the sample with the measuring circuits.

6. Bathymetry and Navigation. All bathymetric data were obtained with a UQN-1B echo sounder. Positions were obtained using Loran A, radar, visual sightings, and celestial fixes.

B. Biological Oceanography.

1. Plankton Hauls. Of the 22 plankton hauls, one was a vertical haul from a depth of approximately 150 meters, and the remaining collections were near-surface horizontal tows. A 1-meter, #10 mesh net was used for all collections. The samples were placed in jars, treated with Formalin, and sent to NAVOCEANO for analysis.

C. Physical and Chemical Oceanography.

1. Temperature. Protected deep sea reversing thermometers with a range of -2° to 10°C were used to obtain in situ water temperatures. Agreement between temperature readings of the paired thermometers was normally 0.03°C or better.

2. Depth. Meter wheel readings, surface and subsurface wire angle measurements, and unprotected thermometers with a range of -2° to 30°C and the L-Z method described in H.O. Pubs. No. 607 and 614 were used to determine thermometric depths.

3. Bathythermographs. Deep, medium, and shallow range mechanical BT's were used.

4. Salinity. Salinities were determined with either an Industrial Instruments (Model RS-7A) or a Bissett-Berman (Model 6220) inductive salinometer. Duplicate determinations were run on each sample, and if the difference between determinations was greater than 0.004‰, additional runs were made. The salinometers were standardized with standard sea water before each series of determinations. Vials of substandard sea water prepared at NAVOCEANO were analyzed occasionally to ensure quality control, and a sample from a previous series was often included with a more recent series so that the precision of the analyses could be estimated. On the basis of these checks, it is estimated that in most instances the accuracy of the salinity analyses was ±0.01‰ or better.

VI. DISPOSITION OF DATA

Results of all bottom sediments and plankton analyses will be on file at NAVOCEANO. Copies of the bottom sediment analyses will be retained by the Geology Department at R.P.I. All oceanographic station data will be filed at the National Oceanographic Data Center under cruise reference number 311131. Bathymetric data records will be on file at NAVOCEANO.

VII. PRELIMINARY ANALYSIS

Since a great deal of laboratory study remains to be done on the bottom sediment samples, only their field descriptions (Table III) are given here. Detailed reports based on the analyses of these bottom sediment samples will be published by NAVOCEANO and R.P.I. in the near future.

Salinity and temperature versus depth diagrams (Figs. 3 through 7) were drawn for selected stations to compare the hydrographic conditions encountered by the EDISTO with those encountered in 1966 during a similar cruise of the Canadian Coast Guard Ship LABRADOR (NODC reference number 31825). At the selected locations, temperatures in the upper 20 meters were usually colder at EDISTO stations than at nearby LABRADOR

stations. Since the compared stations were occupied at approximately the same dates for both years, it appears that freezing in the Labrador Sea-Baffin Bay-Smith Sound region should have begun earlier in 1967 than in 1966. This may not prove to be the case throughout the area, however, because stratification differences brought out by Figures 3 through 7 indicate that, in some instances, a given energy loss might cause a larger temperature drop in the surface layers encountered by LABRADOR. At the most northerly stations compared (Fig. 3), freezing had begun at the EDISTO station and not at the LABRADOR station. The more pronounced stratification at the EDISTO station (see Fig. 3) favors the production of a greater amount of ice; however, the LABRADOR station was taken two days earlier in the fall than the EDISTO station, and temporal variations and differences in the locations of the two stations might further confuse the issue.

A great deal of analysis remains to be done on the ice forecasting stations before an adequate prediction of the ice conditions in 1968 can be made.

VIII. ADDITIONAL WORK NEEDED IN THE REGION

The bottom sampling phase of the survey was of a reconnaissance nature and will help point out problem areas. These areas will require tighter sampling grids for detailed study.

In order to have a rational understanding of the movement of the water masses in the Baffin Bay-Davis Strait areas, subsurface current measurements are necessary.

TABLE III. FIELD DESCRIPTION OF BOTTOM SEDIMENT SAMPLES

VESSEL: SOUTHWIND | CRUISE: BAFFIN BAY 1967 | CHECKED BY | DATE CHECKED

BOTTOM SEDIMENT NO (BS-)	DATE (1967)	SAMPLE POSITION LATITUDE (N)	SAMPLE POSITION LONGITUDE (W)	DEPTH (Fathoms)	GEOMORPHOLOGY OF IMMEDIATE AREA	TYPE OF SAMPLER	WEIGHT OF SAMPLER (lb)	APPROX PENETRATION (cm)	LENGTH OF CORE (cm)	ROCK COLOR CHART CORE NUMBERS: CORE TOP	CORE BOTTOM	FIELD DESCRIPTION OF CORE AND REMARKS	OBS INIT
1E	9/3	69°00.2	54°29.5	70	Rugged uneven bottom	Modified Ewing	200	30	-	-	-	Two tries, no core, pebbles recovered, jar sample	
1G	9/3	69°00.2	54°30.9	70	" "	Orange Peel	120	-	-	10YR4/2	same	Sandy silt, some pebbles & shells, benthic fauna	
2E	9/3	68°59.8	56°52.2	107	Smooth bottom	Modified Ewing	250	30.5	24.13	"	same	first core 24.13, second try-no core	
2G	9/3	68°59.8	56°52.2	108	" "	Orange Peel	70	-	-	"	N4	Sandy silt, w/pebbles, top layer 1/8"	
3G	9/4	69°01.5	59°38	744	" "	"	"	-	-	5YR3/2	5GY6/1	1/16" thick layer at top, clay	
3E	9/4	69°01.5	59°38	702	" "	Modified Ewing	250	322	192.4	10YR4/2 5Y5/2	5Y5/2 10YR4/2	Clay	
3K	9/4	69°01	59°29	714	" "	Kullenberg	250	142.3	121.92	5Y4/4	same	Clay	
4E	9/4	69°00	62°51	1054	" "	Modified Ewing	250	190.4	157.48	5YR3/4	N5	Silty clay grading down to clay	
5E	9/4	69°00.1	65°25.5	322	" "	"	"	210.8	186.7	5GY6/1	N5	Color is mixture of these two	
5G	9/4	68°56	65°24	319	" "	Orange Peel	70	-	-	10YR4/2	N5	Pebbles, ice rafted, mixed w/10YR4/2 clay over N5 clay	
6G	9/4	70°00	66°09	96	Irregular bottom	"	"	-	-	5Y5/2 10YR4/2	10YR5/4	5Y5/2 & 10YR4/2 sand over a silty layer 10YR5/4 w/pebbles, no core sample	
7E	9/5	69°59.6	63°00	1154	Smooth bottom	Modified Ewing	250	208.3	-	5YR3/4	5Y5/6	Upper layer oxidized grading to reduced layer	
8E	9/5	70°00	59°55	264	-	"	200	55.8	25.4	5Y3/2	N3	Sample in 3 jars, oxidized upper layer Tough grey clay in catcher	
9E	9/5	70°00	56°54	103	Irregular bottom	"	250	96.5	27.9	10YR4/2	same	10YR4/2 silty sand w/pelecypods in upper part	
9G	9/5	70°01	56°56	105	" "	Orange Peel	120	-	-	"	"	10YR4/2 silty sand w/pelecypods, pebbles	
10G	9/5	69°59	55°13.5	56	Slightly irregular bottom	"	"	-	-	between 10YR2/2	& 5Y3/2	Fine sandy silt w/many different pelecypods	
11G	9/6	71°04	55°31	294	-	"	"	-	-	10YR4/2	same	Silty clay, no shells, no gravel	
11E	9/6	71°04	55°31	290	-	Modified Ewing	250	269.2	266.7	"	"	Silty clay	
11K	9/6	71°04	55°31	294	-	Kullenberg	"	138.4	98.2	"	"	Silty clay	
12E	9/6	71°00	58°45	228	-	Modified Ewing	"	321.9	236.2	5GY4/1	same	Silty clay	
12G	9/6	70°58.5	58°45	228	-	Orange Peel	120	-	-	"	"	Silty clay w/worm tubes	
13E	9/6	71°00	61°54	1104	Smooth bottom	Modified Ewing	250	?	68.6	10YR4/2	5GY6/1	Two clay layers of different colors	
14E	9/6	71°00	65°00	1154	" "	"	"	226.1	172.7	10YR5/4	10YR4/2	Silty clay	
14K	9/6	71°00	65°00	1154	" "	Kullenberg	"	?	132.1	"	"	Silty clay	
14G	9/6	71°00	65°00	1154	" "	Orange Peel	120	-	-	"	same	Little sample, silty clay	

TABLE III. (Cont'd)

VESSEL: SOUTHWIND | CRUISE: BAFFIN BAY 1967 | CHECKED BY: | DATE CHECKED:

BOTTOM SEDIMENT NO IBS- 1	DATE 1967	SAMPLE POSITION LATITUDE (°N)	SAMPLE POSITION LONGITUDE (°W)	DEPTH (Fathoms)	GEOMORPHOLOGY OF IMMEDIATE AREA	TYPE OF SAMPLER	WEIGHT OF SAMPLER (lb)	APPROX. PENETRATION (cm)	LENGTH OF CORE (cm)	ROCK COLOR CHART CORE NUMBERS: CORE TOP	CORE BOTTOM	FIELD DESCRIPTION OF CORE AND REMARKS	OBS
15E	9/10	78°38	72°01	174	Smooth bottom	Modified Ewing	250	190	158.9	5Y4/1	10R4/6 5YR4/4	Gray grading to brick red, some pebbles	
15G	9/10	78°37	72°09	174	" "	Orange Peel	120	-	-	10Y4/2		Silty clay	
16E	9/10	78°00	75°15	354	-	Modified Ewing	250	-	-	5Y4/1	same		
16G	9/10	77°59.5	75°18	349	-	Orange Peel	120	-	-	10YR4/2	10Y4/2	Silty clay, worm tubes, pebbles of various sizes	
17E	9/10	78°00	73°30	144	-	Modified Ewing	200	152.4	83.8	5Y4/1	same	Coarse material in upper 1.5cm, uniform color	
17K	9/10	78°00	73°30	144	-	Kullenberg	250	147.3	85.1	"	"	Coarse material in upper 2cm, uniform color	
17G	9/10	78°00	73°30	134	-	Orange Peel	120	-	-	-	-	Pebbles, some worms, very little clay	
18E	9/10	77°00	76°37	104	-	Modified Ewing	200	91.4	22.9	5Y4/1	same	Brown, sandy material	
18G	9/10	77°00	76°36	104	-	Orange Peel	120	-	-	"	"	Medium to fine sandy material, clam shells, brittle stars	
19E	9/11	76°59.5	75°25	294	-	Modified Ewing	200	91.4	24.1	10Y4/2 5Y5/2	5YR2/1	Top of core is clay, about 22.9 cm long, underlain by very cohesive hard sediment. Corer did not penetrate very far. Cohesive material trapped between core catcher and core tube. No pebbles or animal life apparent	
19G	9/11	76°59.5	75°25	294	-	Orange Peel	120	-	-	5Y5/2 5Y3/2		Clay, no pebbles or animal life	
20E	9/11	77°00	74°02	244	-	Modified Ewing	200	-	7.6	10Y4/2		Sample in jar	
20G	9/11	77°00	74°02	249	-	Orange Peel	-	-	-	"		Gravel, pebbles, cobbles, green on bottom, brown on top. Top also fouled. Brown streaks may be sulfide	
21G	9/11	77°00	72°45	264	-	"	-	-	-	5Y4/1 and 5Y5/2		Sandy silty clay	
21E	9/11	77°00	72°45	264	-	Modified Ewing	200	-	125.6	" "	"	Cutting head material put in jar	
21K	9/11	77°00	72°45	264	-	Kullenberg	250	-	-	" "	"	Jar sample	
22E	9/11	77°00	71°56	704	-	Modified Ewing	200	-	-	-	-	Steep slope, silty clay, jar sample	
22G	9/11	77°00	71°56	604	-	Orange Peel	120	-	-	-	-	Soupy silty clay, grading down to firm clay	
23E	9/11	76°00	69°25	240	-	Modified Ewing	200	16.5	-	10Y4/2	same	Clay w/pebbles, trapped behind retainer, jar sample	

TABLE III. (Cont'd)

VESSEL: SOUTHWIND | CRUISE: BAFFIN BAY 1967 | CHECKED BY | DATE CHECKED

BOTTOM SEDIMENT NO. (BS-)	DATE (1967)	SAMPLE POSITION LATITUDE (N)	SAMPLE POSITION LONGITUDE (W)	DEPTH (Fathoms)	GEOMORPHOLOGY OF IMMEDIATE AREA	TYPE OF SAMPLER	WEIGHT OF SAMPLER (lb)	APPROX. PENETRATION (cm)	LENGTH OF CORE (cm)	ROCK COLOR CHART CORE NUMBERS: CORE TOP	ROCK COLOR CHART CORE NUMBERS: CORE BOTTOM	FIELD DESCRIPTION OF CORE AND REMARKS	OBS. INIT
23G	9/11	76°12	69°28	236	-	Orange Peel	120	-	-	10YR4/2	-	Silty to sandy clay, pebbles covered by fauna	
												worm tubes, many icebergs in the area	
24E	9/11	76°00	71°37	249	-	Modified Ewing	250	114	38.1	5Y4/1	same	Bottom 3 inches stuffed back into core tube liner,	
												no alcohol added to core. Sandy silt w/pebbles	
24K	9/11	76°03	71°45	244	-	Kullenberg	"	30.5	17.8	"	"	Sandy silt with pebbles	
24G	9/11	76°03	71°45	244	-	Orange Peel	120	-	-	5Y4/1	-	Silty sand w/pebbles, shells, worm tubes. Pebbles	
												of various sizes and lithologies	
25G	9/11	75°58	73°42	219	-	" "	"	-	-	10YR4/2	and 5Y4/4	Silty clay, pebbles, some shells	
25E	9/11	76°00	73°42	219	-	Modified Ewing	250	81.3	33.0	10YR4/2	5Y4/4	Silty clay, bottom ½" pushed back into core, no alcohol	
26E	9/12	76°00	75°41	193	Irregular bottom	" "	"	53.3	24.1	"	5GY2/1 5GY4/1	Core in 3 jars, silty clay, pebbles, no grab	
27E	9/12	75°59	78°03	138	" "	" "	"	71.1	34.3	5Y3/2	same	Shells, pebbles, sandy silty clay & silty clay	
27G	9/12	75°58	78°03	129	" "	Orange Peel	120	-	-	5GY3/2	same	Includes 1 jar of benthos & 3 pockets of cobbles	
28E	9/12	74°58	78°21	209	" "	Modified Ewing	250	-	107	5Y4/4	and 10YR4/2	Sandy, silty clay	
28G	9/12	74°58	78°21	210	" "	Orange Peel	120	-	-	"	"	Worm tubes, pebbles, cobbles, limestone angular	
												and rounded	
29E	9/12	74°58.5	74°12	394	-	Modified Ewing	250	-	194.3	10YR4/2	5Y5/2	Sandy silty clay	
30E	9/12	74°59.6	70°08	469	-	" "	"	198.1	134.6	10YR4/2	5Y4/1	Silty clay with gradual but distinct color change	
30K	9/12	74°59.3	70°06	464	-	Kullenberg	"	114.3	86.4	"	"	Silty clay with gradual but distinct color change	
31E	9/13	75°00	66°18	224	-	Modified Ewing	"	30.5	-	5Y4/4	N4		
31G	9/13	74°59:6	66°19	224	-	Orange Peel	120	-	-	"	5Y4/4	Brown sand w/gravel and pebbles	
32G	9/13	74°59	67°32	87	-	" "	"	-	-	5Y5/2	-	Gravel, silty sand, life on one boulder,	
												Cutting head dented on bottom.	
33E	9/13	75°00	60°15	460	-	Modified Ewing	250	127	50.8	10YR4/2	N6	Silty clay distinct color change at bottom	

TABLE III. (Cont'd)

VESSEL: SOUTHWIND | CRUISE: BAFFIN BAY 1967 | CHECKED BY | DATE CHECKED

BOTTOM SEDIMENT NO (BS-)	DATE (1967)	SAMPLE POSITION LATITUDE (N)	SAMPLE POSITION LONGITUDE (W)	DEPTH (Fathoms)	GEOMORPHOLOGY OF IMMEDIATE AREA	TYPE OF SAMPLER	WEIGHT OF SAMPLER (lb)	APPROX PENETRATION (cm)	LENGTH OF CORE (cm)	ROCK COLOR CHART CORE NUMBERS: CORE TOP	ROCK COLOR CHART CORE NUMBERS: CORE BOTTOM	FIELD DESCRIPTION OF CORE AND REMARKS	OBS INIT
33G	9/13	75°00	60°17	466	-	Orange Peel	120	-	-	10YR5/4 10YR4/2	5Y4/1 N6	Top combination of colors is soupy clay; bottom combination of colors is a silty clay; one pebble	
34E	9/13	74°00	58°10	159	-	Modified Ewing	250	-	-	-	-	Small pebbles caught behind core retainer	
34G	9/13	74°02	58°11	149	-	Orange Peel	120	-	-	10Y4/2	and 5GY5/2	Multi-colored sand, some worms and pebbles	
35E	9/14	74°00	61°30	324	-	Modified Ewing	250	-	-	10YR4/2	N5	Multi-colored clay, jar sample of material behind core catcher, sandy material escaping as core pulled from water	
35G	9/14	74°00	61°30	327	-	Orange Peel	120	-	-	10YR4/2	N5	Top 2.5cm 10YR4/2 soupy clay, some material multi-colored 10YR4/2 and N5, some cohesive clay colored N5. Color change distinct, clay overlies unconsolidated material which washed from sample	
36E	9/14	74°00	65°09	1054	Smooth bottom	Modified Ewing	250	274.3	238.8	5YR5/2	N4	Stiff gray clay	
37E	9/14	74°00	68°52	1114	-	" "	"	322.6	157.5	10YR4/2 5YR4/4	10YR2/2	Silty clay upper part; clay on bottom. Core penetrated to weight stand	
37G	9/14	74°00	68°52	1104	-	Orange Peel	120	-	-	10YR4/2 5YR4/4		Soupy sticky clay, 1 worm tube and 1 pebble	
38E	9/14	74°00	72°35.5	514	-	Modified Ewing	250	216	140	5Y5/2	5Y4/1	Silty clay	
38G	9/14	73°59.3	72°35.5	509	-	Orange Peel	120	-	-	5Y4/1		Small amount of sediment recovered	
39E	9/15	74°00	76°17	455	Smooth undulating bottom	Modified Ewing	250	322.6	232.4	5Y3/2	5Y3/2	Silty clay	
39G	9/15	73°58	76°12	450	" " "	Orange Peel	120	-	-	5Y4/4 5Y5/2	5Y5/2	Silty clay, many worms and worm tubes	
40E	9/15	74°20	80°00	374	Flat smooth bottom	Modified Ewing	250	269	113	5Y5/2	5Y4/1	Silty clay	
40G	9/15	74°20	80°00	379	" " "	Orange Peel	120	-	-	5Y3/2		Silty clay, worm tubes and worms	
41E	9/15	73°51	80°25	449	Undulating bottom	Modified Ewing	250	322.6	240	5Y5/2	5Y6/1		
41G	9/15	73°50	80°23	459	Smooth undulating bottom	Orange Peel	120	-	-	"	5Y5/2	Some gravel, generally silty sandy clay w/dikes filled with course sand and gravel	
42E	9/15	73°00	74°50	494	-	Modified Ewing	250	333	206	5Y5/2 10Y4/2	"	Grading from silty clay on top to clay on bottom	

TABLE III. (Cont'd)

VESSEL: SOUTHWIND | CRUISE: BAFFIN BAY 1967 | CHECKED BY | DATE CHECKED

BOTTOM SEDIMENT NO (BS-)	DATE (1967)	SAMPLE POSITION LATITUDE (N)	SAMPLE POSITION LONGITUDE (W)	DEPTH (Fathoms)	GEOMORPHOLOGY OF IMMEDIATE AREA	TYPE OF SAMPLER	WEIGHT OF SAMPLER (lb)	APPROX PENETRATION (cm)	LENGTH OF CORE (cm)	ROCK COLOR CHART CORE NUMBERS: CORE TOP	CORE BOTTOM	FIELD DESCRIPTION OF CORE AND REMARKS	OBS INIT.
42G	9/15	72°59.5'	74°52	493	-	Orange Peel	120	-	-	10YR4/2	10YR4/2	Silty clay to clay. Two worms. No pebbles	
43E	9/16	73°00	71°15	754	-	Modified Ewing	250	168	163	5YR3/4 5YR3/2	5YR4/1		
43G	9/16	73°00	71°12	754	-	Orange Peel	120	-	-	"	"	Silty clay ½-½" top brown layer, rest olive gray.	
												No life. Some gravel	
44E	9/16	73°00	67°40	1254	Smooth bottom	Modified Ewing	250	335	160	5YR3/4	-		
44G	9/16	72°58.5	67°30	1304	" "	Orange Peel	120	-	-	"	10YR4/2	Silty clay; 1" layer of brown silty clay overlying olive	
												gray silty clay; some pebbles.	
45E	9/16	73°00	64°15	1200	-	Modified Ewing	250	333	231	5YR4/4 5YR3/4	5Y4/1 5Y5/2	Bottom clay in jar. Core showed distinct stratigraphy.	
												Silty clay material	
45G	9/16	72°59	64°15	1200	-	Orange Peel	120	-	-	5YR4/4 10YR4/2	10YR/2	Silty clay and clay. Gradual color change. Very	
												few worms. Three small pebbles	
46E	9/17	72°02	65°28	1303	Smooth bottom with small irregularities	Modified Ewing	250	323	183	10YR4/2	5Y5/2	Bottom 10cm (silty clay) of core was recovered below the catcher within the cutter. The color of	
												this material is 5GY/1 and N6 and was put in a jar.	
46G	9/17	72°02.5	65°27.5	1264	"	Orange Peel	120	-	-	"	10YR4/2 5YR3/4	Silty clay, 1½" top layer, some pebbles, 1 worm tube	
47E	9/17	72°00	62°10	1154	-	Modified Ewing	250	323	220	5YR3/4	5Y4/1 5GY4/1		
47G	9/17	72°00.9	62°15	1154	-	Orange Peel	120	-	-	10YR4/2	10YR4/2	Silty clay, 3 pebbles, homogeneous	
48E	9/17	72°00	58°45	169	-	Modified Ewing	250	102	28	10Y4/2 5Y4/1	5GY4/1 N4	Core cutter material in 2 jars. "Top" jar represents 8.16cm in upper ½ of cutter and ranges from silty clay	
												and sand at top. "Bottom" jar is bottom ½ of cutter 7.62cm , cohesive silty clay	
48G	9/17	71°59	58°45	169	-	Orange Peel	120	-	-	10Y4/2 5Y4/1	5GY4/1 N4	Mostly N4 silt and sand capped by a thin soupy silty	
												clay layer. Many worms and pebbles	

TABLE III. (Cont'd)

VESSEL: EDISTO | CRUISE: BAFFIN BAY 1967 | CHECKED BY | DATE CHECKED

BOTTOM SEDIMENT NO (BS-)	DATE (1967)	SAMPLE POSITION LATITUDE N	SAMPLE POSITION LONGITUDE W	DEPTH (Fathoms)	GEOMORPHOLOGY OF IMMEDIATE AREA	TYPE OF SAMPLER	WEIGHT OF SAMPLER (lb)	APPROX PENETRATION* (cm)	LENGTH OF CORE (cm)	ROCK COLOR CHART CORE NUMBERS: CORE TOP	ROCK COLOR CHART CORE NUMBERS: CORE BOTTOM	FIELD DESCRIPTION OF CORE AND REMARKS	OBS INIT
11G	9/30	72°46	58°33	190	-	Orange Peel	120	-	-	10YR 5/2 5GY 3/2	same	Olive sand, pebbles and some black sand present, brittle stars, tube worms, cocklas, sample put in 5 jars	
15G	10/1	75°24	64°20	172	-	" "	"	-	-	-	5YR 4/4	Very little sample obtained	
15E	10/1	75°24	64°20	172	-	Modified Ewing	250	-	-	-	5GY 4/1	Upper layer appears to be "soupy" olive brown silty sand which washed out of core	
26G	10/6	71°29	67°57.5	1930	-	Orange Peel	120	-	-	5YR 4/4 10YR 4/2		Brown mud	
26E	10/6	71°29	67°57.5	1930	-	Modified Ewing	250	-	-	"	5Y 6/1	Brown mud top layer, olive gray compact material in lower layer, some pebbles present	

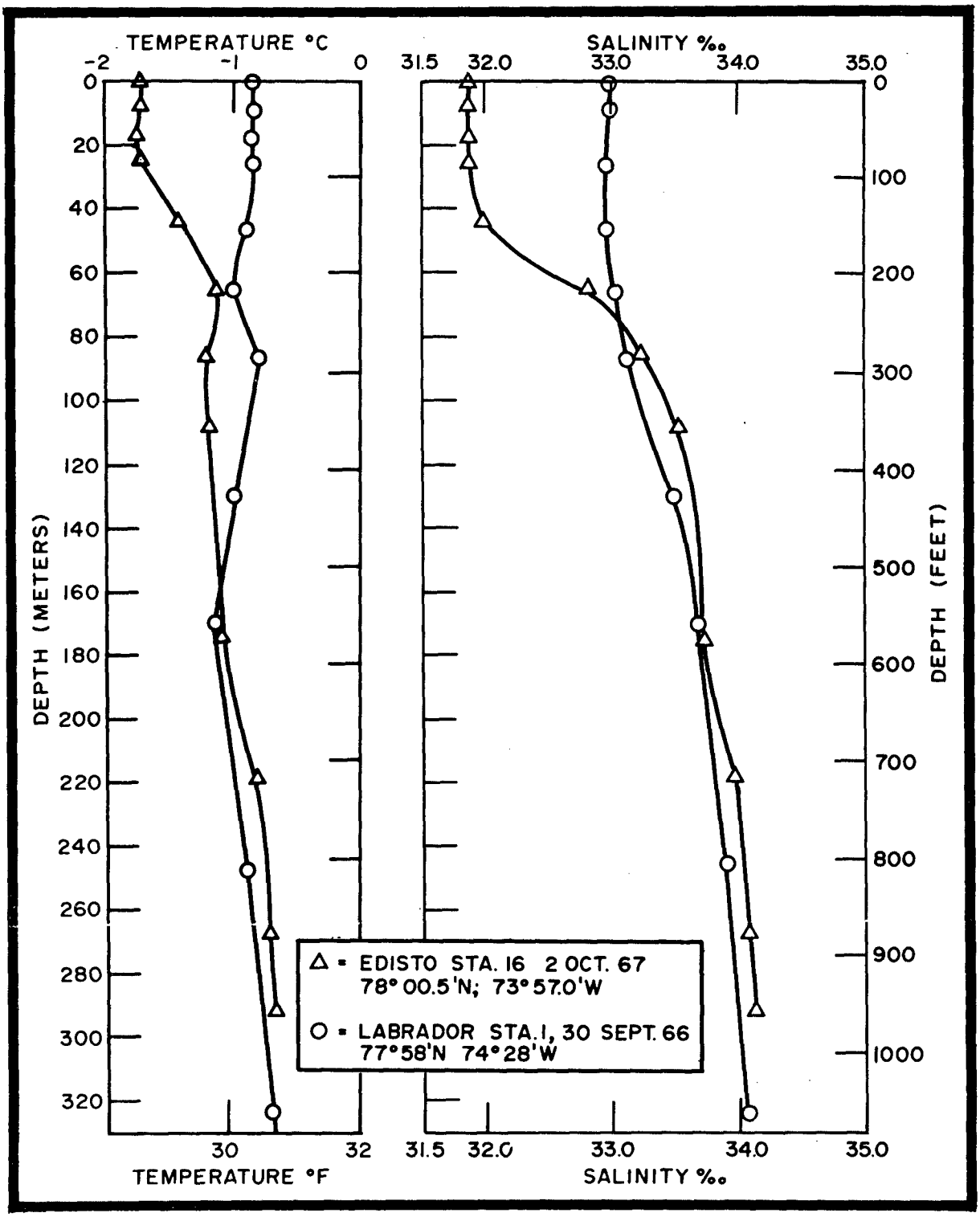


FIGURE 3. COMPARISON OF TEMPERATURE AND SALINITY DATA OBTAINED BY EDISTO AND LABRADOR

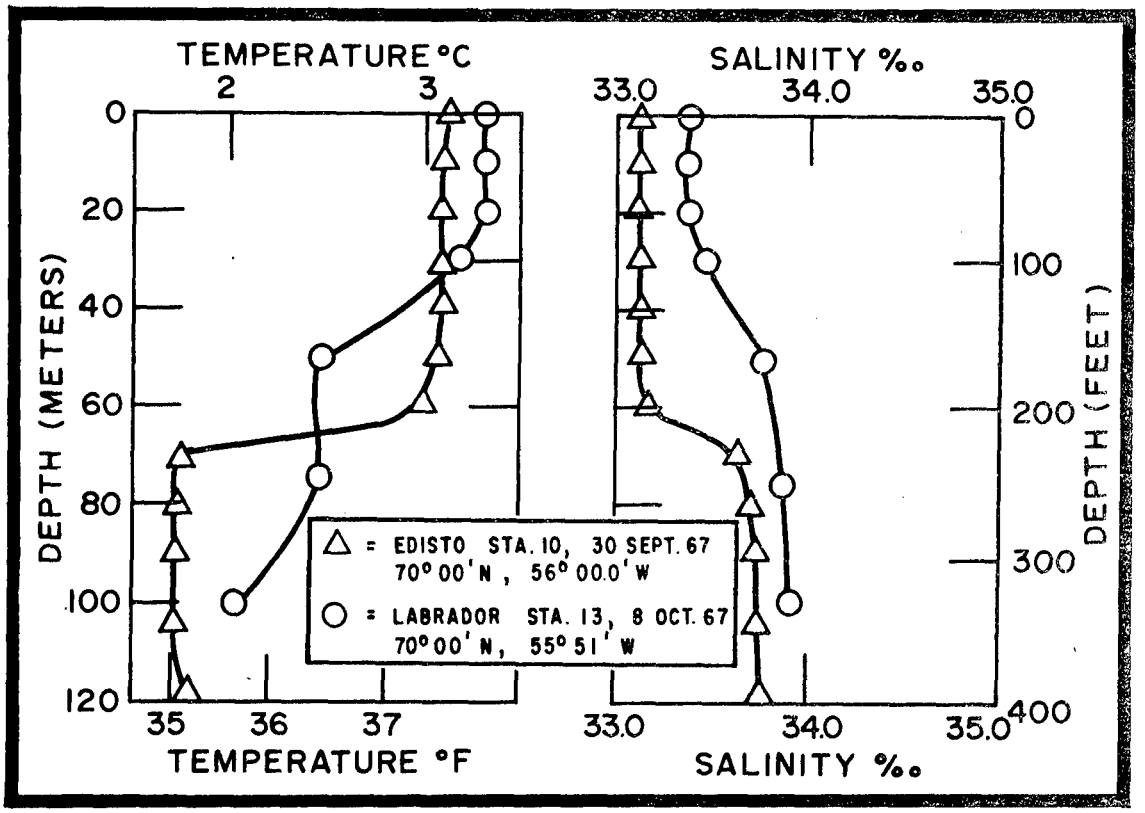
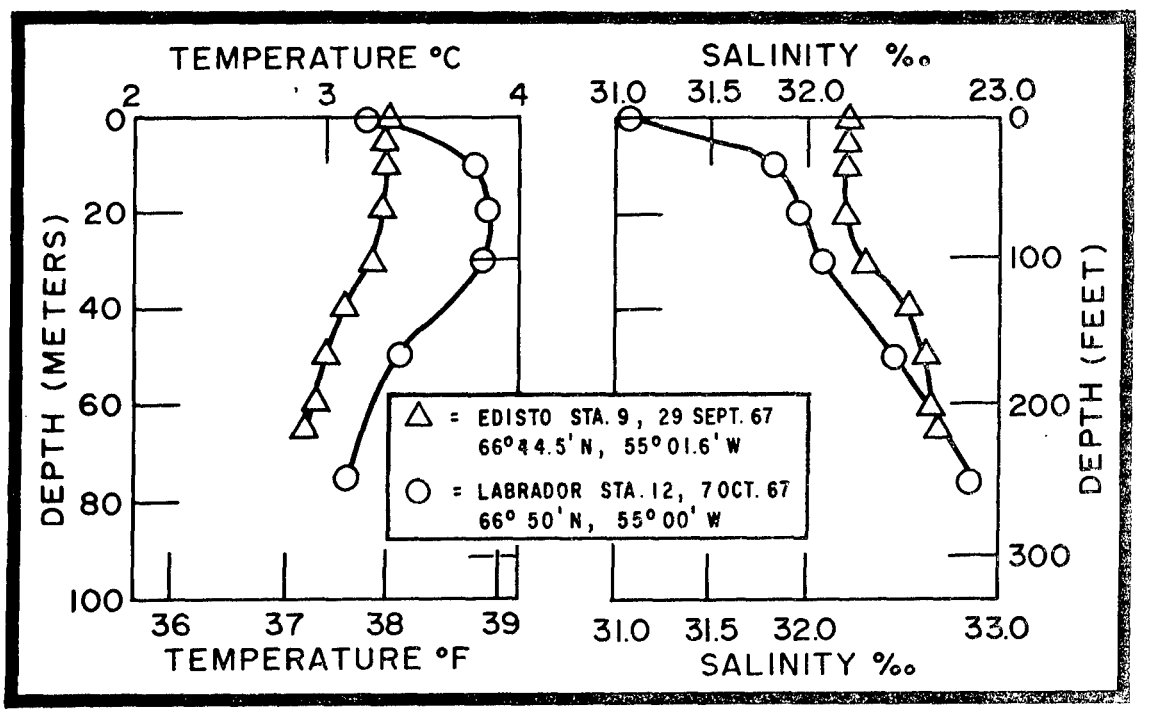


FIGURE 4. COMPARISON OF TEMPERATURE AND SALINITY DATA OBTAINED BY EDISTO AND LABRADOR



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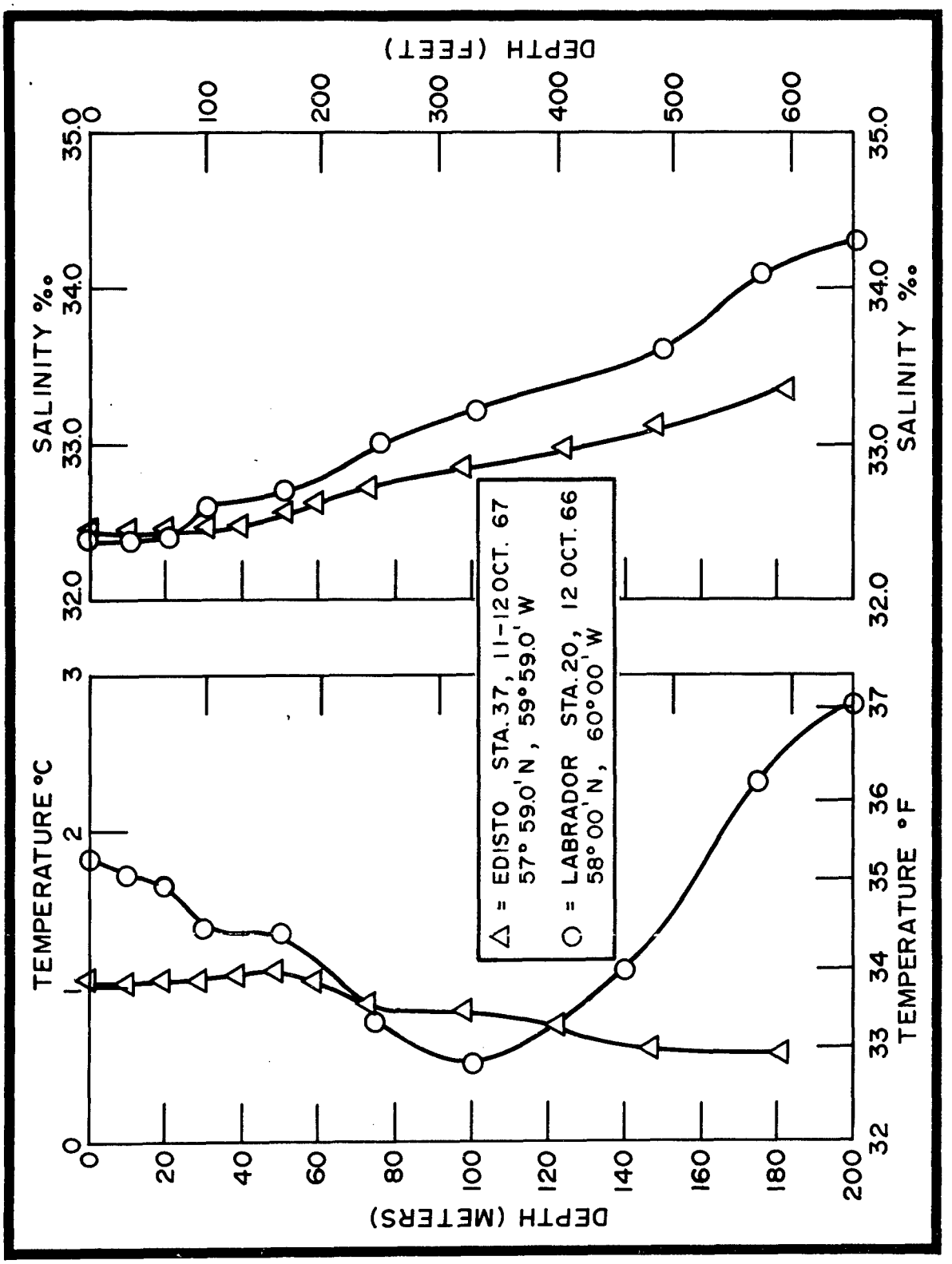

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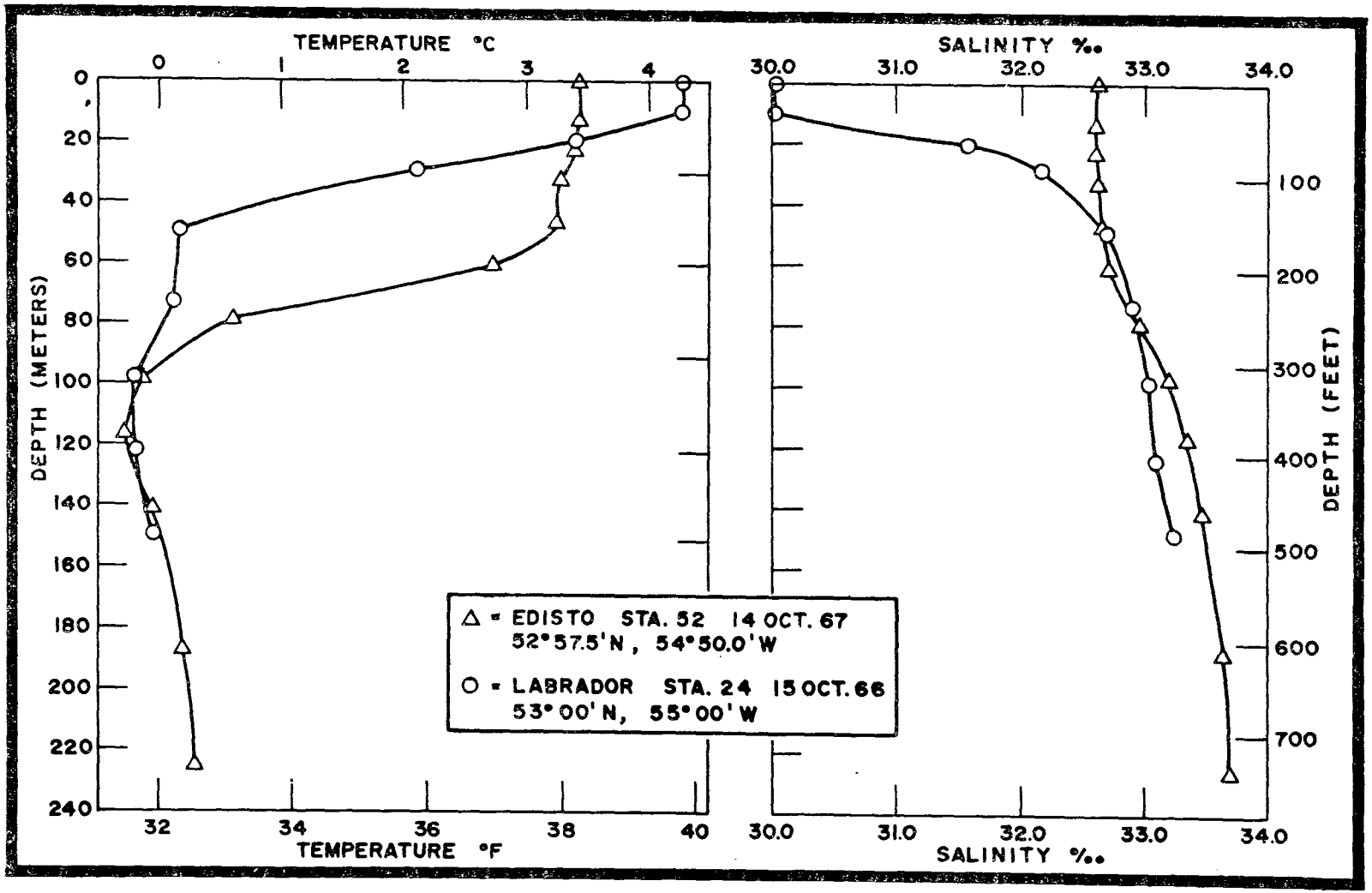

FIGURE 7. COMPARISON OF TEMPERATURE AND SALINITY DATA OBTAINED BY EDISTO AND LABRADOR

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY *(Corporate author)*

U.S. NAVAL OCEANOGRAPHIC OFFICE

2a. REPORT SECURITY CLASSIFICATION

UNCLASSIFIED

2b. GROUP

3. REPORT TITLE

OCEANOGRAPHIC CRUISE SUMMARY
BAFFIN BAY - DAVIS STRAIT - LABRADOR SEA, SUMMER 1967

4. DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

Oceanographic Cruise Summary Informal Report 3 September-14 October 1967

5. AUTHOR(S) *(First name, middle initial, last name)*

LOUIS A. CODISPOTI
JOSEPH H. KRAVITZ

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
May 1968	20	

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
b. PROJECT NO. 202	IR 68-23
c.	9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)*
d.	

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11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
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13. ABSTRACT

A two-phase operation was conducted in the Baffin Bay area during the summer of 1967. The first phase was a bottom sediment survey using the USCGC SOUTHWIND. The primary objective of this phase was to obtain an extensive suite of bottom samples and bottom sediment sound velocities. The second phase was an oceanographic survey using the USCGC EDISTO. Ice potential stations were occupied in support of NAVOCEANO's East Arctic Ice Forecast Program. Additional Nansen cast stations were taken to assist the U.S. Coast Guard in their continual monitoring of the Labrador Current.

A comparison of the temperature and salinity data obtained on the EDISTO survey with data obtained on a similar cruise by CCGC LABRADOR in 1966 indicated that freezing should have begun earlier in 1967 than in 1966.

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
OCEANOGRAPHIC CRUISE SUMMARY BAFFIN BAY - DAVIS STRAIT - LABRADOR SEA USCGC SOUTHWIND (W-AGB 280) USCGC EDISTO (W-AGB 284) ICE FORECASTING STATIONS						